EVIDENCE FOR SYSTEM TRANSFORMATION

IN-SERVICE TEACHER PROFESSIONAL DEVELOPMENT

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For more information or feedback on this paper, please reach out to Ramya Vivekanandan, senior education specialist and thematic lead for Teaching and Learning, at rvivekanandan@globalpartnership.org.

1. Background

In-service professional development (PD) for is a common strategy deployed to improve student learning. When implemented effectively and in combination with other variables, it can improve teaching quality, and in turn, raise student outcomes. Given this, in-service PD is a key investment area for GPE. The recent thematic review in the area of teachers and teaching found that in-service training was the largest teacher-related investment funded by GPE through education sector program implementation grants, with 25 of the 36 implementation grants active in fiscal year 2018 supporting this area. Eleven of the implementation grants also supported other modalities of professional learning such as mentoring, pedagogical supervision and school-based professional learning communities.

Box 1. Key terms

Professional development: activities and support that build teachers' professional knowledge, skills and other qualities (OECD 2009). In the context of this brief, professional development includes training, coaching and other professional support structures for practicing teachers. The terms below describe forms of professional development.

Teacher training: Training to develop and build teachers' or prospective teachers' skills and knowledge. Teacher training may take place before prospective teachers begin teaching usually as a prerequisite for certification (pre-service training), or may target practicing teachers (in-service training).

In-service training: Training that takes place in conjunction with teachers' official teaching duties. In-service training can be required or optional, used to improve teacher skills or to raise qualifications (UIS 2020).

Coaching: A process in which instructional experts provide individualized and sustained one-on-one support to teachers based on classroom observation and feedback, usually focused on specific skills (Evans 2017).

This brief uses the term *in-service professional development* to refer to all modalities of in-service learning and support for teachers, including training and coaching. Globally, government policies and practices related to in-service PD often have limited effect on teacher behavior or student learning. In response to this challenge and about GPE's work specifically, more can be done to ensure that GPE investments reflect the evidence on the most effective approaches in regard to in-service PD. With this in

mind, this brief discusses the evidence and suggests entry points for informing dialogue at the country level around in-service PD.

2. Evidence

Broadly, the evidence base highlights two key characteristics of effective in-service PD: targeted and sustained. Alongside these, a key lesson on teaching should be kept in mind when designing and supporting in-service PD policies and programs: teaching is most effective when it meets students where they are, with pedagogy matching student learning needs. As such, in-service PD must prepare and support teachers in responding to children's individual learning needs (World Bank 2018; Evans and Popova 2015; Popova, Evans, and Arancibia 2016). In the wake of the COVID-19 pandemic, with a growing interest in teaching at the right level as schools reopen, it is all the more important that in-service PD prepares teachers with the assessment skills and strategies to identify student learning levels and with the pedagogical skills to match these levels. Notably, at-scale, government-funded in-service programs often reflect fewer characteristics of effective in-service PD than other evaluated programs run by entities like nongovernmental organizations, social enterprises or researchers (Popova et al. 2018), though the reasons for this are unclear.

Targeted: General and theoretical guidance to teachers tends to have little effect, while practical training and support targeted toward pedagogy for a specific subject (e.g., early grade literacy or numeracy) or topic (e.g., classroom management) can raise student learning outcomes (World Bank 2018; Evans and Popova 2015; Popova, Evans, and Arancibia 2016; Popova et al. 2018). In targeting subject-specific pedagogy, training should also respond to teachers' skill and experience levels, providing specific and relevant guidance on what and how to teach. Modeling and acting out lessons in training is also, in combination with a multitude of additional variables, eventually associated with higher student outcomes; teachers likewise tend to prefer participatory trainings. Research suggests that giving teachers the opportunity to practice the skills from in-service PD programs increases their likelihood of using them. Not surprisingly, implementers of these programs see engagement of teachers for their ideas and context-specific program design as important (World Bank 2018; Evans and Popova 2015; Popova, Evans, and Arancibia 2016; Popova et al. 2018). This highlights the value of engaging teachers in the process of designing the programs such that their needs are reflected, and professional development is responsive to these.

Box 2. Promising investments in professional development

Several education sector program implementation grants highlight potentially powerful investments in professional development (PD). These investments were identified from grant documents, so the implementation and impact of these investments could not be assessed. That said, these promising practices could be case studies for an evaluation of GPE's PD investments:

Democratic Republic of Congo: Funding targeted sustained, school-level PD structures, including teacher mentoring at the school and network levels; the development of new models of inspection and pedagogical support; a training program that included classroom observation techniques; and incentives for the offices that provide pedagogical support to schools.

Cambodia: A variable-part grant included support for school-based teacher mentoring for early grade teachers as part of an established continuous PD management system.

Organisation of Eastern Caribbean States (OECS): Funding intended to establish school-based professional learning communities to improve classroom practices and to develop PD activities for teachers on effective classroom practices, formative assessment and use of student learning data.

Sustained: Though one-off workshops are a common delivery modality for in-service teacher training, they tend not to change teacher practice or raise student learning outcomes. Instead, sustained follow-up visits after training to help teachers implement what they have learned, through long-term mentoring or school-based coaching, can change teacher behavior and raise student learning outcomes (World Bank 2018; Evans and Popova 2015; Popova, Evans, and Arancibia 2016; Popova et al. 2018). In addition, trainings held at centralized locations like conference rooms, government administrative buildings or hotels tend to be less effective (Popova et al. 2018). On the other hand, support embedded in the school setting tends to produce more positive changes in teacher behavior and student learning, perhaps by keeping the focus more practical. Though coaching is more expensive than centralized trainings, research in South Africa suggests that it is more cost-effective when looking at cost per student and growth in student learning (Cilliers et al. 2018).

In addition, the evidence suggests a number of additional important considerations:

Expertise: Trainer quality matters, raising questions about the efficacy of cascade models (in which teacher trainers are trained by master trainers, and in turn they train teachers, who may be expected to train their colleagues), as expertise is diluted in this process (Popova, Evans, and Arancibia 2016). With regard to coaching, research in South Africa finds that highly qualified coaches have demonstrated impacts on student learning. More research is needed to assess whether less qualified coaches can similarly improve teacher behavior and student learning outcomes (Cilliers et al. 2018).

Box 3. Profession development in Kenya

A randomized controlled trial focused on early grade literacy and numeracy in Kenya found that training, coaching and provision of textbooks and teachers' guides had a large effect on student learning. Professional development, coaching and provision of student books had some effect, but smaller—and training and coaching without other inputs did not have a statistically significant effect on student learning. Notably, in the first two groups, training focused in part on how teachers could use the additional resources (for example, how to design lessons that correspond to the student books, how to implement scripted lessons from the teachers' guides). Though the additional inputs were more expensive, both—particularly the provision of books and teachers' guides along with training and coaching—were more cost-effective than training and coaching alone (Piper et al. 2018).

Frequency and duration: Broadly, global research suggests that more coaching contact time has greater impact on teacher behaviors and thus on student learning. That said, the limited evidence available suggests that in developing countries, even short-term coaching can change teacher behavior, which may be an important finding for low-resource settings. Perhaps unsurprisingly, research from Kenya suggests that assigning more teachers per coach leads to fewer coaching visits per teacher. In settings like Kenya where some form of instructional support infrastructure already exists (as is the case in some partner countries, even if support personnel actually spend little time in the classroom), research suggests that contact time between teachers and coaches or instructional supervisors can be raised at relatively low cost. This can be done by supporting the professional development of existing instructional coaches and removing barriers to their classroom visits, such as transportation costs. This specific research did not look at the connections between contact time and student learning outcomes, though it was framed within the broad

evidence base showing that higher contact time is generally associated with higher student learning.

More evidence—particularly in low-resource settings—is needed to better understand the cost-benefit of increasing the number of coaches in a given education system (thus decreasing the ratio of teachers to coaches and increasing contact time) and its effect on student learning (Piper and Zuilkowski 2015). For more traditional in-service models, evidence suggests that more contact time is generally more effective, with research suggesting that a sustained training model is more likely to be effective than single one-off workshops. Consecutive days of face-to-face training have been shown to raise student outcomes (Popova et al. 2018).

Remote vs. in-person: While virtual PD has been explored as an alternative to in-person PD coaching in low-resource settings and may be of particular interest in the COVID/post-COVID education landscape, some evidence suggests that remote in-service PD is associated with a decrease in student learning (Popova et al. 2018). Some evidence urges caution and careful planning around virtual approaches. Technology can expand the flexibility and reach of PD programming, but like in-service PD more generally, it needs to be practical, focused on specific and ongoing pedagogies.

Though the COVID period may provide more evidence on systemwide remote PD, current evidence suggests that remote PD is most effective when used in conjunction with in-person training and supports (that is, a blended model of in-person and tech-enabled development). For instance, a program in Bangladesh provided teachers with SD cards loaded with videos and audio modeling good practice,[1] and a program in Malawi sent teachers SMS messages with encouragement and tips on pedagogy, classroom management and training concepts between training sessions.[2] In these and other interventions, tech-enabled remote support was used in tandem with in-person PD programming, and it was sustained and targeted (McAleavy et al. 2018).

With regard to coaching specifically, research in South Africa finds that while on-site coaching is more expensive, it has larger positive impacts on teacher productivity and student learning and is more cost-effective than virtual coaching. This seems, in part, to be attributed to the value of the direct observation and feedback, which were stronger and more consistent through on-site coaching. The main avenue for direct

[1] The program, English in Action, reached 51,000 teachers in Bangladesh and was assessed by a series of internal evaluations that used quantitative and qualitative metrics (McAleavy et al. 2018).

[2] The Malawi intervention was part of a small randomized controlled trial run by RTI International (McAleavy et al. 2018). The intervention was one component of the larger Malawi Early Grade Reading Activity.

observation and feedback to be offered in virtual coaching is through submission of videos, which may be costly and reliant on technology that is not always readily available, limiting the appeal of this approach. Additionally, virtual coaching faces challenges in building trusting relationships, few opportunities for direct observation, and less accountability, as coaches' exposure to teacher practice is dependent on teacher reporting. This suggests that virtual programs may need to incorporate more incentives for active teacher engagement. Researchers hypothesize that combining in-person coaching with virtual coaching introduced later, after a relationship has been formed, may be more effective (Cilliers et al. 2020), in line with broader findings about tech-enabled PD.

Bundling complementary interventions: A growing body of evidence has found high impact on student learning from interventions that combine training and coaching for teachers with lesson plans, books or other materials for teachers, students or both (Popova, Evans, and Arancibia 2016; Evans and Popova 2015; Cilliers et al. 2018; Popova et al. 2018). Much of this research has focused on early grade reading interventions, an area of great relevance for GPE. Findings suggest that incorporating training into interventions like provision of flashcards or other teaching and learning materials is more effective than just providing these inputs without preparing teachers to use them (Evans and Popova 2015).

Other considerations: Other characteristics of PD programs also appear connected to high impacts on student learning. Incentives for participating in training, such as promotion or salary boosts, are connected to student learning gains. Programs with high impact on student learning also target teachers based on their years of experience in the teaching field, recognizing that new and experienced teachers may require different forms of professional development (Popova et al. 2018).

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